

WHAT IS CLAIMED IS:

1. A substrate having a graphic thereon, said graphic comprising a non-phosphorescent material applied to the substrate to define a non-phosphorescent region of said graphic and a phosphorescent material applied to the substrate to define a phosphorescent region of said graphic, at least a portion of the non-phosphorescent region and at least a portion of the phosphorescent region being in overlapping relationship with each other so as to define an overlapping region of said graphic wherein when the overlapping region is exposed to light sufficient to cause phosphorescence of the phosphorescent region said at least a portion of the phosphorescent region phosphoresces to render said overlapping region visible in the absence of light.
2. A substrate as set forth in claim 1 wherein the non-phosphorescent region of the graphic is in registry with the phosphorescent region thereof.
3. A substrate as set forth in claim 1 wherein the phosphorescent material comprises a phosphorescent ink applied to the substrate.
4. A substrate as set forth in claim 1 wherein the non-phosphorescent region comprises a non-phosphorescent ink applied to the substrate.
5. A substrate as set forth in claim 1 wherein the non-phosphorescent material comprises a non-phosphorescent ink, said non-phosphorescent region comprising a plurality of dots of the non-phosphorescent ink applied to the substrate, the phosphorescent material comprising a phosphorescent ink, said phosphorescent region comprising a plurality of dots of the phosphorescent ink applied to the substrate, the dots of

phosphorescent ink being interspersed with the dots of non-phosphorescent ink in the overlapping region of the graphic.

6. A substrate as set forth in claim 1 wherein the area concentration of phosphorescent material in the overlapping region is in the range of about 20 percent to about 80 percent of the area of the overlapping region.

7. A substrate as set forth in claim 6 wherein the area concentration of phosphorescent material in the overlapping region is about 50 percent of the area of the overlapping region.

8. A substrate as set forth in claim 1 wherein the non-phosphorescent material is a fluorescent material.

9. A substrate as set forth in claim 1 wherein the non-phosphorescent region comprises at least two non-phosphorescent inks applied to said substrate.

10. A substrate as set forth in claim 9 wherein at least one of the non-phosphorescent inks is fluorescent.

11. A substrate as set forth in claim 1 wherein the substrate has an inner face and an outer face, one of the non-phosphorescent material and the phosphorescent material being applied to the inner face of the substrate and the
5 other one of the non-phosphorescent material and the phosphorescent material being applied to the outer face of the substrate.

12. An absorbent article comprising a liner, an outer cover and an absorbent body disposed between the liner and the outer cover, said outer cover being defined at least in part by the substrate set forth in claim 1.

13. A substrate as set forth in claim 1 wherein the non-phosphorescent region defines a background of the graphic, the phosphorescent region being disposed substantially within the non-phosphorescent region in
5 overlapping relationship therewith whereby the overlapping region defines a detail of the graphic.

14. A substrate as set forth in claim 13 wherein the background defined by the non-phosphorescent region is a vignette.

15. A substrate as set forth in claim 1 wherein the non-phosphorescent region comprises a background and at least one detail within the background, the phosphorescent region being in overlapping relationship with the non-phosphorescent
5 region within the background, said detail defined by the non-phosphorescent region being discrete from said phosphorescent region.

16. A substrate as set forth in claim 1 wherein the non-phosphorescent region defines a detail of the graphic, the phosphorescent region defining a detail that is a mirror image of the detail defined by the non-phosphorescent region
5 and is in at least partially overlapping relationship with the detail defined by the non-phosphorescent region, the detail defined by the phosphorescent region being rotated relative to the detail defined by the non-phosphorescent region.

17. A substrate as set forth in claim 1 wherein the substrate is a film.

18. A substrate as set forth in claim 1 wherein the substrate is a non-woven web.

19. A substrate as set forth in claim 1 wherein the non-phosphorescent material is a colored non-phosphorescent material.

20. A substrate as set forth in claim 1 wherein the non-phosphorescent region is non-transparent.

21. A substrate as set forth in claim 1 wherein the non-phosphorescent region is visibly distinguishable from the substrate under normal light conditions.

22. A substrate as set forth in claim 1 wherein the graphic has a glow intensity as determined by a Glow Intensity Test at 60 seconds of at least about 0.15 lux.

23. A substrate as set forth in claim 22 wherein the graphic has a glow intensity as determined by a Glow Intensity Test at 60 seconds of at least about 0.5 lux.

24. A substrate having a graphic thereon, said graphic comprising a colored non-phosphorescent region and a phosphorescent region, at least a portion of the non-phosphorescent region and at least a portion of the phosphorescent region being in overlapping relationship with each other so as to define an overlapping region of said graphic wherein when the overlapping region is exposed to light sufficient to cause phosphorescence of the phosphorescent region said at least a portion of the phosphorescent region phosphoresces to render said overlapping region visible in the absence of light.

25. A substrate as set forth in claim 24 wherein at least a portion of the substrate is colored to define said colored non-phosphorescent region, said phosphorescent region being defined by a phosphorescent material applied to said colored portion of the substrate.

26. An article comprising a first substrate, a second substrate in overlaid relationship with the first substrate, and a graphic comprising a colored non-phosphorescent region and a phosphorescent region, at least a portion of the colored non-phosphorescent region and at least a portion of the phosphorescent region being in overlapping relationship with each other so as to define an overlapping region of said graphic wherein when said overlapping region is exposed to light sufficient to cause phosphorescence of the phosphorescent region, said at least a portion of the phosphorescent region phosphoresces to render said overlapping region visible in the absence of light, one of said first and second substrates having the colored non-phosphorescent region thereon and the other one of said first and second substrates having the phosphorescent region thereon.

27. An article as set forth in claim 26 wherein the graphic has a glow intensity as determined by a Glow Intensity Test at 60 seconds of at least about 0.15 lux.

28. A substrate as set forth in claim 27 wherein the graphic has a glow intensity as determined by a Glow Intensity Test at 60 seconds of at least about 0.5 lux.

29. A substrate having a graphic thereon, said graphic comprising a non-photoluminescent material applied to the substrate to define a non-photoluminescent region of said graphic and a photoluminescent material applied to the substrate to define a photoluminescent region of said graphic, at least a portion of the non-photoluminescent region and at least a portion of the photoluminescent region being in overlapping relationship with each other so as to define an overlapping region of said graphic wherein when the overlapping region is exposed to light sufficient to cause

luminescence of the photoluminescent region said at least a portion of the photoluminescent region luminesces.

30. A substrate as set forth in claim 29 wherein the non-photoluminescent region of the graphic is in registry with the photoluminescent region thereof.

31. A substrate as set forth in claim 29 wherein the photoluminescent material comprises a photoluminescent ink applied to the substrate.

32. A substrate as set forth in claim 29 wherein the non-photoluminescent region material comprises a non-photoluminescent ink applied to said substrate.

33. A substrate as set forth in claim 29 wherein the non-photoluminescent material comprises a non-photoluminescent ink, said non-photoluminescent region comprising a plurality of dots of the non-photoluminescent
5 ink applied to the substrate, the photoluminescent material comprising a photoluminescent ink, said photoluminescent region comprising a plurality of dots of the photoluminescent ink applied to the substrate, the dots of photoluminescent ink being interspersed with the dots of non- photoluminescent
10 ink in the overlapping region of the graphic.

34. A substrate as set forth in claim 29 wherein the area concentration of photoluminescent material in the overlapping region is in the range of about 20 percent to about 80 percent of the area of the overlapping region.

35. A substrate as set forth in claim 34 wherein the area concentration of photoluminescent material in the overlapping region is about 50 percent of the area of the overlapping region.

36. A substrate as set forth in claim 29 wherein the photoluminescent material is at least one of phosphorescent and fluorescent.

37. A substrate as set forth in claim 29 wherein the non-photoluminescent region comprises at least two non-photoluminescent inks applied to said substrate.

38. A substrate as set forth in claim 29 wherein the substrate has an inner face and an outer face, one of the non-photoluminescent material and the photoluminescent material being applied to the inner face of the substrate and
5 the other one of the non-photoluminescent material and the photoluminescent material being applied to the outer face of the substrate.

39. An absorbent article comprising a liner, an outer cover and an absorbent body disposed between the liner and the outer cover, said outer cover being defined at least in part by the substrate set forth in claim 29.

40. A substrate as set forth in claim 29 wherein the non-photoluminescent region defines a background of the graphic, the photoluminescent region being disposed substantially within the non-photoluminescent region in
5 overlapping relationship therewith whereby the overlapping region defines a detail of the graphic.

41. A substrate as set forth in claim 40 wherein the background defined by the non-photoluminescent region is a vignette.

42. A substrate as set forth in claim 29 wherein the non-photoluminescent region comprises a background and at least one detail within the background, the photoluminescent region being in overlapping relationship with the non-

- 5 photoluminescent region within the background, said detail defined by the non-photoluminescent region being discrete from said photoluminescent region.

43. A substrate as set forth in claim 29 wherein the non-photoluminescent region defines a detail of the graphic, the photoluminescent region defining a detail that is a mirror image of the detail defined by the non-
- 5 photoluminescent region and is in at least partially overlapping relationship with the detail defined by the non-photoluminescent region, the detail defined by the photoluminescent region being rotated relative to the detail defined by the non-photoluminescent region.

44. A substrate as set forth in claim 29 wherein the substrate is a film.

45. A substrate as set forth in claim 29 wherein the substrate is a non-woven web.

46. A substrate as set forth in claim 29 wherein the non- photoluminescent material is a colored non-photoluminescent material.

47. A substrate as set forth in claim 29 wherein the non- photoluminescent region is non-transparent.

48. A substrate as set forth in claim 29 wherein the non-photoluminescent region is visibly distinguishable from the substrate under normal light conditions.

49. A substrate as set forth in claim 29 wherein the graphic has a glow intensity as determined by a Glow Intensity Test at 60 seconds of at least about 0.15 lux.

50. A substrate as set forth in claim 49 wherein the graphic has a glow intensity as determined by the Glow Intensity Test at 60 seconds of at least about 0.5 lux.

51. A substrate having a graphic thereon, said graphic comprising a colored non-photoluminescent region and a photoluminescent region, at least a portion of the non-photoluminescent region and at least a portion of the photoluminescent region being in overlapping relationship with each other so as to define an overlapping region of said graphic wherein when the overlapping region is exposed to light sufficient to cause luminescence of the photoluminescent region said at least a portion of the photoluminescent region luminesces.

52. A substrate as set forth in claim 51 wherein at least a portion of the substrate is colored to define said colored non-photoluminescent region, said photoluminescent region being defined by a photoluminescent material applied to said colored portion of the substrate.

53. An article comprising a first substrate, a second substrate in overlaid relationship with the first substrate, and a graphic comprising a colored non-photoluminescent region and a photoluminescent region, at least a portion of the colored non-photoluminescent region and at least a portion of the photoluminescent region being in overlapping relationship with each other so as to define an overlapping region of said graphic wherein when said overlapping region is exposed to light sufficient to cause luminescence of the photoluminescent region, said portion of the photoluminescent region luminesces, one of said first and second substrates having the colored non-photoluminescent region thereon and the other one of said first and second substrates having the photoluminescent region thereon.

54. An article as set forth in claim 53 wherein the graphic has a glow intensity as determined by a Glow Intensity Test at 60 seconds of at least about 0.15 lux.

55. A substrate as set forth in claim 54 wherein the graphic has a glow intensity as determined by a Glow Intensity Test at 60 seconds of at least about 0.5 lux.

56. A method of applying a graphic to a substrate, said method comprising:

applying a non-phosphorescent material to the substrate to form a non-phosphorescent region of the graphic; and

5 applying a phosphorescent material to the substrate to form a phosphorescent region of the graphic wherein at least a portion of the phosphorescent region and at least a portion of the non-phosphorescent region are in overlapping relationship with each other to form an overlapping region of the graphic wherein when the overlapping region is exposed to light sufficient to cause phosphorescence of the phosphorescent region said at least a portion of the phosphorescent region phosphoresces to render said overlapping region visible in the absence of light.

10

57. A method as set forth in claim 56 wherein the step of applying a non-phosphorescent material to the substrate comprises applying a non-phosphorescent ink to the substrate generally in a pattern of dots to form the non-phosphorescent region of the graphic, the step of applying a phosphorescent material to the substrate comprising applying a phosphorescent ink to the substrate generally in a pattern of dots to form the phosphorescent region of the graphic, at least a portion of the dots of phosphorescent ink being interspersed with at least a portion of the dots of non-phosphorescent ink to define the overlapping region of the graphic.

10

58. A method as set forth in claim 57 wherein the phosphorescent ink dots are discrete from the non-phosphorescent ink dots.

59. A method as set forth in claim 56 wherein the non-phosphorescent material and the phosphorescent material are applied to the substrate by flexographic printing.

60. A method as set forth in claim 56 wherein the substrate has an inner face and an outer face, the step of applying a non-phosphorescent material to the substrate comprising applying said non-phosphorescent material to the
5 outer face of the substrate, the step of applying a phosphorescent material to the substrate comprising applying said phosphorescent material to the outer face of said substrate.

61. A method as set forth in claim 56 wherein the substrate has an inner face and an outer face, the step of applying a non-phosphorescent material to the substrate comprising applying said non-phosphorescent material to the
5 inner face of the substrate, the step of applying a phosphorescent material to the substrate comprising applying said phosphorescent material to the inner face of said substrate.

62. A method as set forth in claim 56 wherein the substrate has an inner face and an outer face, the step of applying a non-phosphorescent material to the substrate comprising applying said non-phosphorescent material to one
5 of the inner face and the outer face of the substrate, the step of applying a phosphorescent material to the substrate comprising applying said phosphorescent material to the opposite one of the inner face and the outer face of said substrate.

63. A method as set forth in claim 56 wherein the substrate comprises at least two layers arranged in overlaid relationship with each other, the step of applying a non-phosphorescent material to the substrate comprising applying
5 said non-phosphorescent material to one layer of the substrate, the step of applying a phosphorescent material to the substrate comprising applying said phosphorescent material to another layer of the substrate.

64. A method as set forth in claim 56 wherein the step of applying a non-phosphorescent material to the substrate comprises applying said non-phosphorescent material to the substrate such that the colored non-phosphorescent region
5 defines a background of the graphic, the step of applying a phosphorescent material to the substrate comprising applying said phosphorescent material to the substrate such that the phosphorescent region is in overlapping relationship with the non-phosphorescent region and defines a detail of the
10 graphic.

65. A method as set forth in claim 56 wherein the step of applying a non-phosphorescent material to the substrate comprises applying said non-phosphorescent material to the substrate such that the non-phosphorescent region defines a
5 background and at least one detail of the graphic, the step of applying a phosphorescent material to the substrate comprising applying said phosphorescent material to the substrate such that the phosphorescent region is in overlapping relationship with the non-phosphorescent region
10 within said background and the detail defined by the non-phosphorescent region is discrete from said phosphorescent region.

66. A method as set forth in claim 56 wherein the step of applying a non-phosphorescent material to the substrate

comprises applying a colored non-phosphorescent material to the substrate.

67. A method of applying a graphic to a substrate, said method comprising:

applying a non-photoluminescent material to the substrate to form a non-photoluminescent region of the

5 graphic; and

applying a photoluminescent material to the substrate to form a photoluminescent region of the graphic wherein at least a portion of the photoluminescent region and at least a portion of the colored non-photoluminescent region are in

10 overlapping relationship with each other to form an overlapping region of the graphic wherein when the overlapping region is exposed to light sufficient to cause luminescence of the photoluminescent region said at least a portion of the photoluminescent region luminesces.

68. A method as set forth in claim 67 wherein the step of applying a non-photoluminescent material to the substrate comprises applying a non-photoluminescent ink to the substrate generally in a pattern of dots to form the non-

5 photoluminescent region of the graphic, the step of applying a photoluminescent material to the substrate comprising

applying a photoluminescent ink to the substrate generally in a pattern of dots to form the photoluminescent region of the graphic, at least a portion of the dots of photoluminescent

10 ink being interspersed with at least a portion of the dots of non-photoluminescent ink to define the overlapping region of the graphic.

69. A method as set forth in claim 68 wherein the photoluminescent ink dots are discrete from the colored non-photoluminescent ink dots.

70. A method as set forth in claim 67 wherein the non-photoluminescent material and the photoluminescent material are applied to the substrate by flexographic printing

71. A method as set forth in claim 67 wherein the step of applying a non-photoluminescent material to the substrate comprises applyin a colored non-photoluminescent material to said substrate.